

DIATHONITE ACOUSTIX

Eco-friendly, sound absorbing, breathable cork-based plaster

Premixed plaster for the acoustic insulation and for the realisation of sound absorbing coatings for walls and ceilings. Eco-friendly product, formulated with natural raw materials such as cork (grain size 0 – 3 mm / 0-0.12 in), clay, diatomaceous earth and hydraulic binder. It is recyclable as inert and thanks to its excellent sound absorbing ability, it eliminates reverberation and it reduces echoes. Furthermore, the product has high breathability, good thermal insulation and dehumidifying features and an excellent fire reaction. Its porosity and the presence of lime make it extremely bacteriostatic and anti-mould.

BENEFITS

- Excellent sound absorbing features:
 - NRC 0.60;
 - $\alpha_w = 0.65$.
- It contributes to the thermal insulation;
- Excellent compression resistance;
- Fire reaction: class A1;
- Thanks to its high breathability it avoids moulds and condensations;
- Very fast application system (by plastering pump);
- Easy to be applied on bent and complex surfaces;
- LEED mapping;
- It can be applied over old plasters.

YIELD

kg/m² 4.70 (±10%) per cm of thickness.
lb/ft² 2.45 (±10%) per inch of thickness.

APPLICATION FIELDS

Premixed plaster, for indoor and outdoor application, suitable to realize sound-absorbing walls and ceilings of movie theaters, auditorium, conference halls, worship places, gyms and all those building where acoustic correction is necessary. The product is also suitable to insulate exterior walls and partition walls. Moreover *Diathonite® Acoustix* is a natural compound and is suitable whenever eco-friendly materials are required.

COLOUR

Light grey.

PACKAGING

20 kg (44.09 lb) paper bag.
Pallet: n° 60 paper bags (1200 kg – 2645.55 lb).

STORAGE

Store the product in its original containers tightly closed, away from sun, water, ice and at temperature higher than +5°C / 41°F.
Storage time: 12 months.



Diasen srl

Zona Industriale Berbentina, 5 Sassoferrato ANCONA

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EN 998-1

Specification for mortar for masonry - Part 1: Mortar for internal and external plaster

NRC:	0.60
SAA:	0.61
α_w :	0.65
Thermal conductivity:	$\lambda_{20, dry} = 0.083$ W/mK (category T1)
Compression resistance:	3.0 N/mm ² (category CS II)
Fire reaction:	class A1
Vapour permeability value:	$\mu = 4$
Water absorption:	0.35 kg/m ² h ^{0.5} (category W2)
Adhesion:	0.258 N/mm ² – FP: C
Density:	470±30 kg/m ³
Chloride content:	0.018±0.003%
Durability (freeze-thaw cycles):	evaluation based on the valid arrangements where the mortar is supposed to be used.



For application videos, product page, safety data sheet and other information.

Thermal – acoustic insulation - Plasters

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Technical Data

Features		Unit
Yield	kg/m ² 4.70 (±10%) per cm of thickness. lb/ft ² 2.45 (±10%) per inch of thickness.	kg/m ² lb/ft ²
Aspect	powder	-
Colour	light grey	-
Specific weight	470 ± 30 29.34±1.87	kg/m ³ lb/ft ³
Grain size	0 - 3	mm
	0 - 0.12	in
w/c ratio	0.60 – 0.75	l/kg
	12-15 lt per paper bag (20 kg) 3.17 – 3.96 gal U.S per paper bag (44.09 lb)	gal U.S / lb
Mixture consistency	It can be sprayed	-
Application temperature	+5 /+30	°C
	41 / 86	°F
Working time (EN 1015-9 – Method B)	40	minutes
Drying time (T=20°C/68°F; R.H. 40%)	15	days
Storage	12	months
Packaging	20 kg paper bag	kg
	44.09 lb paper bag	lb

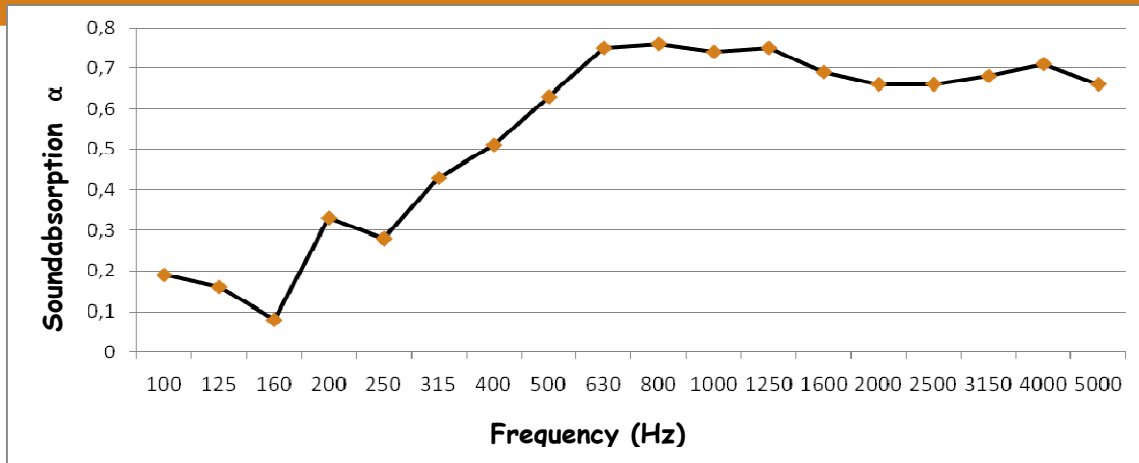
Final performances		Unit	Regulation	Result
Reaction to fire	Class A1	-	EN 13501-1	-
Resistance to compression	3.0	N/mm ²	EN 1015-11	category CS II
Adhesion onto the support (brick)	435.11 62656	lbf/in ² (psi) psf	ASTM C349	
	0.258	MPa = N/mm ²	EN 1015-12	mortar break
	37.42	lb/ft ²		
Coefficient of vapor permeability	μ = 4 WVT = 14	- grains/h-ft ²	EN 1015-19 ASTM E96	highly breathable
Thermal conductivity (λ _{20, dry})	0.083	W/mK	EN 1745 ASTM C518	-
Thermal resistance (R) for 1 cm of thickness	0.120	m ² K/W	10355	-
Thermal resistance (R) for 1 inch of thickness	1.738	ft ² °F h/BTU	ASTM C518	-
Chloride content	0.018±0.003%	-	EN 1015-17	-
Fire classification	Class A	-	ASTM E84	Flame spread index 0 Smoke developed index 0

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Frequency (Hz)	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000
α_s	0.19	0.16	0.08	0.33	0.28	0.43	0.51	0.63	0.75	0.76	0.74	0.75	0.79	0.66	0.66	0.68	0.71	0.66
α_p	0.10			0.35			0.65			0.75			0.65			0.70		

ACOUSTIC PERFORMANCES		Unit	Regulation	Result
Noise Reduction Coefficient (NRC) thickness 3 cm (1.18 inch)	0.60	-	ASTM C423	-
Sound Absorption Average (SAA) thickness 3 cm (1.18 inch)	0.61	-	ASTM C423	-
α_w – weighted alpha thickness 3 cm (1.18 inch)	0.65	-	ISO 11654	-
Acoustic absorbing class thickness 3 cm (1.18 inch)	C	-	ISO 11654	-
Sound absorption between 600 and 1500 [Hz] thickness 3 cm (1.18 inch)	$\alpha > 70\%$	-	ISO 354	-
Increase of the sound insulation value (Rw) compared to a traditional plaster	3	dB	EN ISO 10140-2 EN ISO 717-1	-
Facade insulation [25 cm (9.84 in) brick + 3 cm (1.18 in) Diathonite outside]	D2m,nT,w = 46	dB	EN ISO 140-5 EN ISO 717-1	-
Theoretical soundproofing power [external wall realized with 5 cm (1.97 in) Diathonite + 25 cm thermal block (9.84 in) + 1,5 cm (0.59 in) plaster]	RW = 59.0	dB	EN ISO 140-5 EN ISO 717-1	-
Theoretical soundproofing power [external wall realized with 2 cm (0.79 in) Diathonite + 20 cm (7.87 in) thermal block + 2 cm (0.79 in) Diathonite]	RW = 56.0	dB	EN ISO 140-5 EN ISO 717-1	-

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ACOUSTIC PERFORMANCES		Unit	Regulation	Result
Theoretical soundproofing power [external wall realized with 3 cm (1.18 in) <i>Diathonite</i> + 12 cm (4.72 in) brick + 3 cm (1.18 in) <i>Diathonite</i>]	$R_W = 53.0$	dB	EN ISO 140-5 EN ISO 717-1	-
Theoretical soundproofing power [external wall realized with 2 cm (0.79 in) <i>Diathonite</i> + 20 cm (7.87 in) brick + 2 cm (0.79 in) <i>Diathonite</i>]	$R_W = 52.0$	dB	EN ISO 140-5 EN ISO 717-1	-
Soundproofing power once applied [partition wall realized with 2 cm (0.79 in) <i>Diathonite</i> + 25 cm (9.84 in) Poroton block + 2 cm (0.79 in) <i>Diathonite</i>]	$R'_W \geq 51.0$	dB	EN ISO 140-5 EN ISO 717-1	-

* The above data, even if carried out according to regulated tests, are indicative and they may change when specific building site conditions vary.

LEED® Credits

Standard LEED for New Construction & Major Renovation,
LEED for Schools, LEED for Core & Shell, v. 2009

Thematic area	Credits	Points
Energy & Atmosphere	EAp2 - Minimum energy performance	mandatory
	EAc1 – Optimize Energy Performance	from 1 to 19
Materials & Resources	MRc2- Construction Waste Management	from 1 to 2
	MRc4 – Recycled Content	from 1 to 2
	MRc5 – Regional Materials	from 1 to 2
	MRc6 - Rapidly Renewable Materials	1
Indoor Environmental Quality	IEQp3 - Minimal Acoustical Performance*	compulsory
	IEQc3.2 - Construction Indoor Air Quality Management Plan — Before Occupancy	1
	IEQc4.2 - Low Emitting Materials - Paints and Coatings	1
	IEQc9 - Enhanced Acoustical Performance*	1
	IEQc11 - Mold Prevention*	1

* credits valid only for LEED for Schools, LEED for Core & Shell, v. 2009 standard.

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PREPARATION OF SUPPORT

The support must be completely hardened and resistant enough. The surface must be thoroughly clean, well consolidated, without debris or detaching parts.

Brick

Primer is not needed, *Diathonite Acoustix* can be directly applied to the support.

Concrete

Damaged or crumbly concrete can be restored with suitable cement mortar.

Iron bars can be treated with *Anticorrosive 2K* (see technical data sheet).

Smooth concrete: apply the primer *Aquabond* (see technical data sheet).

Rough concrete: primer is not needed; directly apply the plaster to the support.

Cellular concrete

Diathonite Acoustix can be applied over cellular concrete panels without primer.

Masonry

If necessary, clean the surface with water jet cleaner or brush the surface.

Check the masonry, restore damaged or not fixed bricks and stones.

If there are salts, apply *Diathonite Regularization* (see technical data sheet).

To uniform the substrate use a lime based mortar to keep breathability.

Old plaster

Make sure that the plaster is compact and well bonded to the support. Otherwise, it is recommended to partially or completely remove it.

In presence of salts, remove damaged plaster and apply *Diathonite Regularization* (see technical data sheet).

In case of plasters, according to the wide range of paints present on the market, it is recommended to perform an adhesion test to verify the suitability of the application or if *Aquabond* primer is needed (see technical data sheet).

Onto smooth plaster apply *Aquabond* primer (see technical data sheet) or, if needed, tap the surface.

Onto rough plaster, primer is not needed and *Diathonite Acoustix* can directly be applied to the support.

Panels

Take care to put the panels close to each other.

Over non treated cork panel *Diathonite Acoustix* can be applied without primer. According to the wide range of panels on the market, it is recommended to perform an adhesion test to verify the suitability of the application or if *Aquabond* primer is needed (see technical data sheet).

Wood

Over non treated wood, apply *Diathonite Acoustix* directly.

If wood is smooth or treated, treat the surface with the primer *Aquabond* (see technical data sheet).

MIXING

Based on the absorption degree of the substrate and on the environmental conditions, it is recommended to dose the right amount of water necessary to obtain correct adhesion. The specified amount of water is merely indicative.

- If the product is mixed with a concrete mixer or with drill mixer, add 12 – 15 lt / 3.17 – 3.96 gal U.S. of clean water per bag of *Diathonite Acoustix* (20 kg – 44.09 lb). **Do not mix the material in cement mixer for more than 3-4 minutes.**
- The mixture must be foamy.
- Do not add other substances to the mixture.

APPLICATION

Application by hand

1. It is **FUNDAMENTAL** to wet the surface, in particular during summer season, and in case of walls exposed to sun. If a primer is used, there is no need to wet the substrate.
2. Apply a first coat of *Diathonite Acoustix* by trowel of about 1.5 cm / 0.59 in of thickness.
3. Over the applied coat, perform reference bands to obtain the required thicknesses. Points and reference bands must be created with the same product or it is possible to use steel or wood edging. In this case, these must be removed as soon after the application of the last coat.

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4. Corner sections can be placed together with reference bands, anyway before the application of the last coat.
5. To secure corner and angles, in multi-floor application, use steel corner beads. These must be fixed with *Diathonite Acoustix*.
6. Apply next layers when the previous one is superficially dry and visually lighter in colour (after about 12/24 hours), until obtaining the required thickness. Each layer must have at max 2.5cm / 0.98 in of thickness.
7. Wet the plaster before the application of each layer.
8. At 6.00cm / 2.36in of thickness, it is recommended to use *Polites 140* plaster mesh (see technical data sheet). The mesh must be drowned into the plaster at about half of the total thickness. If needed, it is suggested to use the mesh even for application over panels, wood, plasterboard or to unstable substrates.
Where there are beams and pillars, the mesh must stick out of about 15 cm / 5.90 in on both sides of the element.
9. When smoothing the plaster, do not push *Diathonite Acoustix* that much against the wall, in order to preserve the porosity of the plaster. Use a straight edge to accurately smooth the surface.
5. Any successive layers must be applied when the previous one is superficially dry and visually lighter in colour (after about 12/24 hours). Wet the plaster before the application of any layer.
6. Spray *Diathonite Acoustix* with few interruptions. Otherwise, place the nozzle into water to avoid clumps.
7. Over the first applied coat, perform reference bands to obtain the required thicknesses. Points and reference bands must be created with the same product or it is possible to use steel or wood edging. In this case, these must be removed as soon after the application of the last coat.
8. Corner sections can be placed together with reference bands, anyway before the application of the last coat.
9. To secure corner and angles, in multi-floor application, use steel corner beads. These must be fixed with *Diathonite Acoustix*.
10. At 6.00 cm / 2.36 in of thickness, it is recommended to use *Polites 140* plaster mesh (see technical data sheet). The net must be drowned into the plaster at about half of the total thickness. If needed, it is suggested to use the mesh even for application over panels, wood, plasterboard or to unstable substrates.
Where there are beams and pillars the mesh must stick out of about 15 cm on both sides of the element.
11. When smoothing the plaster, do not push *Diathonite Acoustix* that much against the wall, in order to preserve the porosity of the plaster. Use a metal straight edge a trowel to accurately smooth the surface.

Application by plastering pump

Diathonite Acoustix can be applied by using plastering machine for light weight pre-mixed products.

The set up of the machine varies accordingly to the specific type of pump used.

It is possible to use three phases plastering pump (such as PFT G4) equipped with stator D6-3, hollowed mixing blades (semi-closed), and conical material holder hose with a diameter of 35/25 mm, 14 or 16 mm nozzle.

1. It is **FUNDAMENTAL** to wet the surface, in particular during summer season, and in case of walls exposed to sun. If a primer is used, there is no need to wet the substrate.
2. Load the content of the bags inside the hopper and adjust the flowmeter, starting with a high water flow and reducing it until reaching the most suitable mixture consistency for the product adhesion.
3. Spray *Diathonite Acoustix* bottom up.
4. Apply a first coat of product as regularisation with a maximum thickness of 1.5 cm / 0.59 in. Next layers must have a thickness not higher than 2.5 cm / 0.98 in.

Application to ceiling

For ceiling application, *Diathonite Acoustix* must be applied with premixed plastering pump. Hand application is not recommended. The set up of the machine varies according to the specific type of pump used. It is suggested to start with a semi-fluid compound consistency and set up the flowmeter until reaching the most suitable mixture consistency for the application.

1. If the surface is NOT treated with *Aquabond*, abundantly wet the substrate.
2. Load the content of the bags inside the hopper and adjust the flowmeter of the machine.
3. Perform reference bands to obtain the desired thickness.
4. Apply *Diathonite Acoustix* with a maximum thickness per coat of 2.0 cm / 0.79 in.

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5. Drown *Polites 140* plaster mesh (see technical data sheet) at about half of the total thickness over the product, still fresh, in order to maintain an overlapping of 3.0 cm / 1.18 in on the joints. Avoid any curling or bubbling formation.

The use of *Polites 140* plaster mesh is necessary on panels, plasterboard plates, wooden ceilings and in all cases in which the support is subject to movements or when is damaged. On clay/cement or concrete ceiling the use of *Polites 140* plaster mesh is not necessary up to a thickness of 3.0 cm/1.18 in.

6. Apply a second layer of plaster when previous one is hardened, taking care to perfectly drown the plaster mesh and by avoiding to leave holes on the surface. Onto unstable substrate it is suggested to apply the mesh with plugs or nails.
7. *Polites 140* plaster mesh must be interrupted in correspondence of reference bands, taking care to maintain an overlapping of 3.0 cm/1.18 in.
8. Reference bands must be removed when the surface is compact and superficially dry. The empty spaces left by reference bands must be filled with *Diathonite Acoustix*.
9. When smoothing the plaster, do not push *Diathonite Acoustix* that much against the wall in order to preserve the porosity of the plaster. Use a straight edge to H or to knife. The product should be floated.

DRYING TIME

At 23°C / 73.4°F and 50% relative humidity level, the product dries completely in 10-15 days.

- Drying time is influenced by humidity level and by temperature and it may significantly change.
- Protect *Diathonite Acoustix* plaster from ice, direct sunlight and wind while curing.
- In case of high temperature, direct sunlight or strong wind it is necessary to wet the plaster 2/3 times per day for the first 2/3 days after the application.
- At temperature higher than 28°C/82°F, wet the plaster every 2 hours to avoid cracks.
- If applied indoor, ventilate as much as possible the room during application and drying.

For sound insulation works, it is possible to use, one of Diasen smoothers (see technical data sheets).

The smoothers, if applied outdoor, must be protected with Diasen finishes or other water-repellent and breathable finishes.

If applied indoor, it is recommended to use decorative coatings or Diasen finishes or other breathable finishes.

The application of smoothers or coatings can reduce the sound-absorbing properties of the plaster, depending on the thickness and on the covering features of the coating used.

SUGGESTIONS

- Do not apply at temperature lower than +5°C (41°F) and higher than +30°C (86°F).
- During summer season, apply the product in the cooler hours of the day, away from sun.
- Do not apply with imminent threat of rain or ice, in conditions of strong fog or with relative humidity level higher than 70%.
- If applied on the internal side of external walls, it is necessary that the external surface does not absorb water. Otherwise, treat the external surface with a water-repellent and breathable product like *BKK* or *BKK Eco*.
- In case of exposed walls, apply a clear, breathable and water repellent siloxane coating such as *BKK* or *BKK eco*.
- Before the application of the product it is recommended to cover any element that will not be coated by the plaster.

CLEANING

Wash tools with water before the product hardens.

SAFETY

While handling, please respect the instructions described in product safety data sheet and always use protective gloves and antidust mask.

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